

Adults and Larvae of a New Species of *Gelis*
(Hymenoptera, Ichneumonidae) Parasitizing Eggs of
***Schizocosa saltatrix* (Araneida, Lycosidae)**

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Abstract: Adults and cephalic structures of the final instar of a new species of *Gelis* from eastern Canada are described. The adults and the cocoon from which each had emerged were found in the egg sac of the spider *Schizocosa saltatrix* (Hentz.). The cephalic structures were extracted from the cocoons. Adults and final instars are compared with those of other species of *Gelis*.

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Adults and larval remains of a new species of *Gelis* were extracted from the egg sac of a female spider, *Schizocosa saltatrix* (Hentz.). The egg sac contained seven adult females and the seven cocoons from which they had emerged. The cephalic structures of the larvae were found inside the cocoons. The larvae had eaten all of the eggs. The egg sac was attached to the spinnerets of the spider. The spider was recovered from a pitfall trap in undisturbed (except by fire) tall-grass prairie at Windsor, Ontario. Females carry the egg sac, containing at least 50 eggs, and also, for a time, the young on hatching.

The genus *Gelis* Thunberg is a large one containing many species, mostly occurring in the Holarctic region. The hosts of the group are varied but usually consist of insects that make cocoons or small cases of silk-like material. Known hosts include cocoons of Chrysopidae and various small Lepidoptera, Ichneumonidae, Braconidae, larval cases of Psychidae and Coleophoridae, and egg sacs of spiders. The Nearctic species of *Gelis* have not been reviewed since Strickland's (1912) treatment of the group. The species occurring in Finland were recently revised by Hellén (1970). The head capsule of the final instar of *Gelis tantillus* (Cresson) was described and figured by Short (1959), of *urbanus* (Brues) by Finlayson (1960), of *tenellus* (Say) by Finlayson (1962). The head capsule of *Gelis fasciatus* (Fabricius) was figured by Beirne (1941), of *tenellus* by Clancy (1946), and that of an unknown species of *Gelis* was figured by Guppy and Miller (1970). The head capsule of *Gelis bruesii* (Strickland) was described by Short (1959).

Gelis schizocosae n. sp.

Adult. Female body (Fig. 1) moderately stout, length 3.6–3.9 mm. Head (Figs. 2–4) moderately stout, maximum head width two times mesoscutum width between spiracles. Face (Fig. 2) with prominent, broad, median bulge. Clypeus (Fig. 2) strongly convex, not sharply delimited from face, apical margin sharp, reflexed, slightly arcuate, without median projections. Temple (Figs. 3, 4) relatively long, length 0.2 mm; length of temple to width of eye in ratio 2:3. Antenna (Fig. 5) relatively short, length 1.5–1.6 mm, with 14 to 16 flagellar articles, with first flagellar article (postannellus) longer than second, three times



Plate 1. FIGS. 1-6. 1, habitus, lateral aspect; 2, head, frontal aspect; 3, dorsal aspect; 4, laterodorsal aspect; 5, antenna; 6, ovipositor, lateral aspect.

longer than wide; flagellar articles 1 to 4 each 0.07 mm wide, each successively shorter in length.

Thorax (Figs. 7, 8) with pronotum very broad in dorsal aspect, with very narrow, deep impression separating collar from remainder of pronotum, the latter with a submarginal transverse swelling immediately in front of pronotal sulcus; pronotum medially in same plane as anterior portion of mesoscutum. Mesoscutum not much shorter than propodeum, in ratio 4:5, dorsally at middle broadly flattened, appearing subquadrate; notauli not defined. Scutellum only vaguely discernible. Mesopleurum at upper posterior corner with impression prominent; sternaulus not defined. Propodeum short, length 0.4 mm, strongly declivous from just behind middle, with apical transverse carina only and this indistinct medially and laterally except at apices. Front tibial spur less than half length of front basitarsus, middle tibial spur about half length of middle basitarsus. Wings absent.

First abdominal segment (Fig. 9) relatively elongate, length from spiracle to apex 0.2 mm; first tergite increasingly broader apically, much broader from apical third; with apical

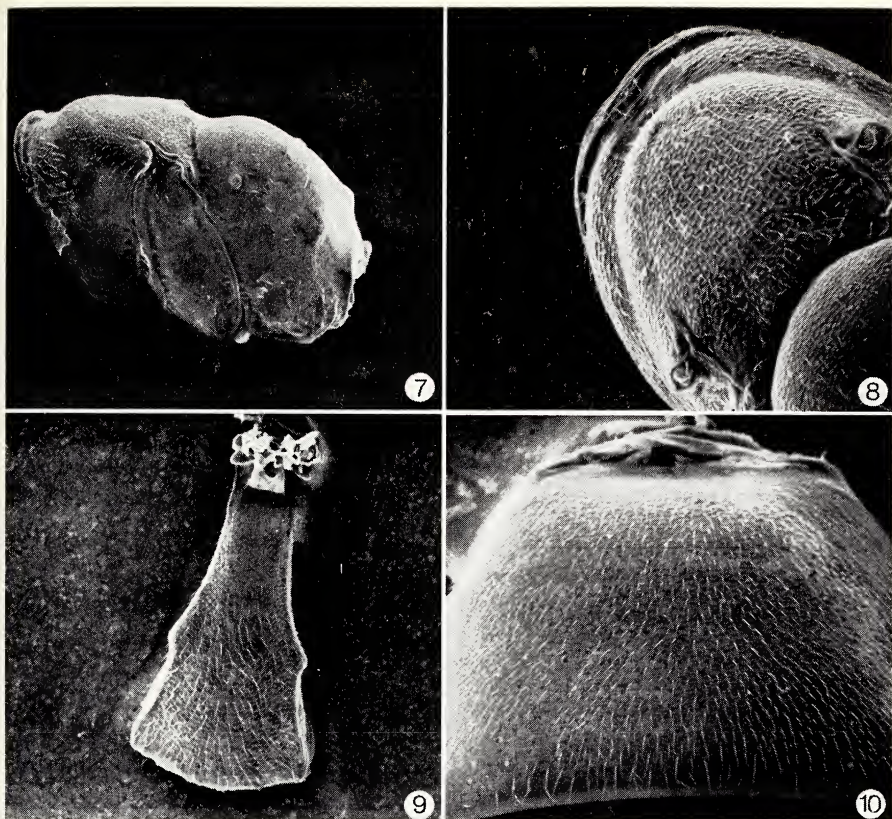


Plate 2. FIGS. 7-10. 7, thorax, laterodorsal aspect; 8, pronotum, laterodorsal aspect; 9, first abdominal tergite, dorsal aspect; 10, second abdominal tergite, dorsal aspect.

margin slightly arcuate; spiracles distinct but not prominent. Ovipositor (Fig. 6) with sheaths short, length 0.6-0.7 mm, about same length as first abdominal segment.

Body with evenly distributed, minute sculpture, subopaque; distinctly pubescent, with setae evenly spaced (Fig. 8). Abdominal tergites with setae shorter and more dense, each separated in distance by its own length from adjacent seta (Fig. 10).

Body colour black and ferrugineous, the ferrugineous colouration relatively pale and with a slight fulvous tinge. Head ferrugineous and black. Face, clypeus, mandibles, and antennal scape ferrugineous; frons dark ferrugineous; temple, vertex, and cheeks black; temporal orbit at middle proximal to eye with ferrugineous maculation; antenna with first flagellar ferrugineous, apical articles fusco-ferrugineous. Thorax ferrugineous, propodeum slightly darker. Legs ferrugineous; middle femora each on dorsal surface and at apical third, middle tibiae each on dorsal surface and at basal and apical third tinged fuscous. Hind legs ferrugineous, femora each in apical half, tibiae each in apical and basal third tinged fuscous. Abdomen black and ferrugineous, the ferrugineous colouration slightly darker than that of head and thorax; first tergite ferrugineous, second black in basal third, apically ferrugineous, third to fifth black, apical tergites ferrugineous, at sides slightly tinged fuscous.

TABLE 1. Comparative characteristics of females of *schizocosae* n. sp. and *canadensis*.

Species	<i>schizocosae</i>	<i>canadensis</i>
Character (in mm)		
Total length	3.60-3.90	2.60-3.10
Head—greatest width	0.77-0.85	0.65-0.75
Temple—length	0.20-0.22	0.12-0.15
Eye—greatest width	0.32-0.35	0.30-0.35
Antenna—length	1.55-1.65	1.47
Antennal flagellar I—length	0.17-0.20	0.12-0.17
Propodeum		
—length	0.42-0.45	0.47-0.50
—width	0.32-0.35	0.35-0.37
Mesoscutum		
—length	0.35-0.37	0.25-0.37
—width between spiracles	0.32-0.35	0.35-0.37
Front leg		
—tibial spur length	0.12-0.17	0.12
—basitarsus length	0.25-0.27	0.27
Middle leg		
—tibial spur length	0.12-0.15	0.12
—basitarsus length	0.22-0.25	0.30
First tergite—length spiracle to apex	0.22-0.25	0.17-0.20
Ovipositor sheath—length	0.62-0.70	0.53

Remarks. Males are not known. The females are similar to females of *canadensis* Cresson, yet exhibit many differences as well. Some of the more significant comparative characteristics of the species of *Gelis* are the degree of delimitation of the clypeus from the face, the length of the flagellar articles in relation to the width, the shape of the pronotum, the length of the mesoscutum and propodeum and the relation between the two, the amount of reduction in carination of the propodeum, the degree of declivity of the propodeum posteriorly, and the length of the ovipositor. Comparative quantitative data are given for individuals of *schizocosae* n. sp. and *canadensis* in Table I. There are significant differences in measurements of the head, flagellar articles, propodeum, and mesoscutum between the two species. The clypeus is not sharply delimited from the face in either species and the flagellar articles are short relative to the width whereas those of many Nearctic species are elongate. The temple is distinctively longer in *schizocosae* n. sp. females. The pronotum is markedly different in *canadensis* females, at a much lower plane relative to the mesoscutum than that of *schizocosae* n. sp. females and the collar is strongly narrowed. The front and middle tibial spurs are distinctly longer in *schizocosae* n. sp. in proportion to length of the basitarsus than in *canadensis*. The proportional lengths and widths of the head, mesoscutum, and propodeum are somewhat similar, though not the same (Table I), and the amount of declivity of the propodeum posteriorly is similar. The ovipositor sheaths of females of both species are short compared to many other species of *Gelis*. The body of *schizocosae* n. sp. and *canadensis* females is minutely sculptured, subopaque, and without evident punctuation. The head and most of the abdominal tergites are darker than the rest of the body in females of both species.

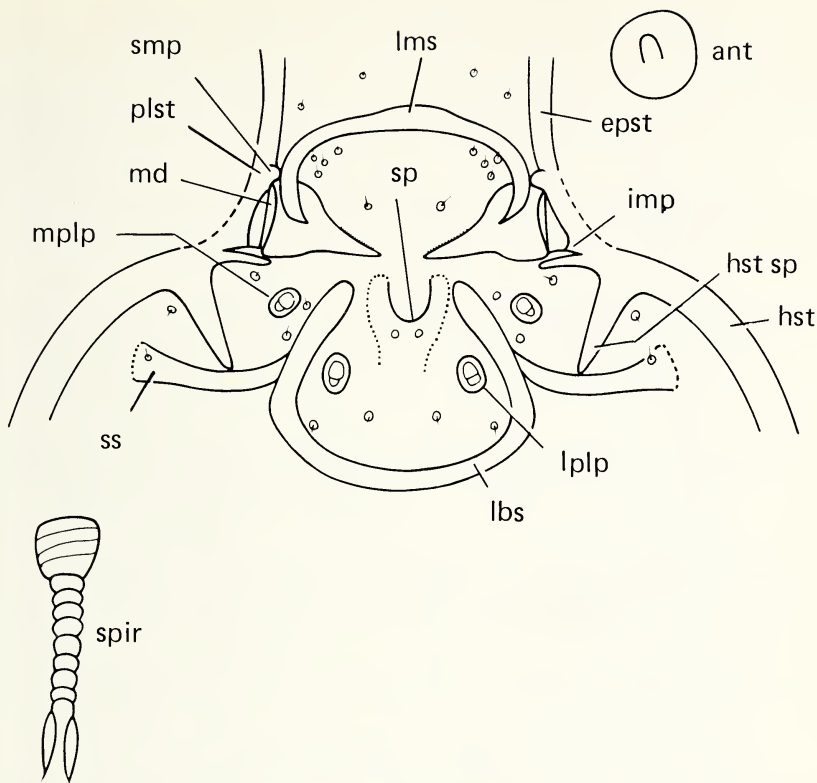


Plate 3. FIG. 11. Cephalic structures of final instar; ant, antenna; epst, epistoma; hst, hypostoma; hst sp, hypostomal spur; imp, inferior mandibular process; lbs, labial sclerite; lms, labral sclerite; lplp, labial palp; md, mandible; mplp, maxillary palp; plst, pleurostoma; smp, superior mandibular process; sp, silk press; spir, spiracle; ss, stipital sclerite.

Type material. *Holotype*, adult female, Windsor, Ontario, collected July, 1976, J. H. Redner. Host: *Schizocosa saltatrix* (Hentz). Type number 15203, Canadian National Collection, Ottawa.

Paratypes. Six adult females, same locality and host data as holotype, deposited in Canadian National Collection, Ottawa. Head capsules of two larvae mounted on slides and associated with adults, other five in cocoons in microvial under one of the adult females, all from the same host.

Larva. Cephalic structure of final instar (Fig. 11) moderately sclerotized. Epistoma lightly sclerotized, slender, incomplete dorsally. Superior mandibular processes well developed. Pleurostoma lightly sclerotized, more lightly than hypostoma. Inferior mandibular processes each with two struts. Hypostoma relatively long, not abruptly curving lateroventrally. Hypostomal spur three times as long as width at base. Stipital sclerites each lightly sclerotized distally, meeting labial sclerite at ventral third of lateral arm, not nearly reaching hypostoma. Labial sclerite subtriangular in shape, lateral arms straight, only slightly thickened dorsally, each meeting ventral part at obtuse angle. Prelabial sclerite absent. Maxillary and labial palpi each slightly bulbous, with two sensilla, dorsal sensillum larger

than ventral. Silk press U-shaped, sclerotized; area ventral to silk press lightly sclerotized, sclerotized more lightly than silk press; two small sensilla beneath external opening of press. Mandibles small, each with straight blade, with one row of very fine, small, numerous teeth on dorsal surface, evenly spaced, and extending from near base to near apex, ventral surface without teeth. Labral sclerite rounded, not extending strongly dorsally, bending sharply medially at each end, extending to dorsal third of mandible. Antennae papilliform, each 2.2 times as long as width at base. Spiracle (Fig. 11) with four reticulations on atrium, with long stalk of eight or nine annulations and closing apparatus, the latter distant from atrium. Integument densely covered with cone-shaped protuberances, with some short setae.

Remarks. The mandible of larvae of *schizocosae* n. sp. (Fig. 11) is unique among the described cephalic structures of Nearctic species. There is one row of small teeth on the dorsal surface and there are no teeth on the ventral surface. This characteristic of the mandible is shared by *Dichrogaster* (= *Otacustes*) as defined by Short (1959). There are two rows of teeth on the dorsal surface of the mandible of larvae of *Gelis urbanus* and *tenellus*, and there are teeth on both the dorsal and ventral surfaces of the mandible of larvae of *tantillus*, *bruesii*, and *fasciatus*. Larvae of *schizocosae* n. sp. share an incomplete epistoma with those of *urbanus*, *tantillus*, *bruesii*, and *fasciatus*. The epistoma of specimens of *tenellus* is complete. The hypostomal arm of *schizocosae* n. sp. individuals is longer than that of specimens of *urbanus* and *tenellus* and does not curve abruptly ventrally, but also is not straight as in *tantillus*. The hypostomal spur is three times as long as the width at base instead of four times as in *urbanus*, *tenellus*, and *tantillus*. The dorsal arms of the labial sclerite are slightly thickened dorsally as in *tenellus*. The stipital sclerite meets each arm of the labial sclerite in the ventral third as in *tenellus* and *tantillus*. The area ventral to the silk press is more extensively sclerotized and is not divided in *schizocosae* n. sp. The labral sclerite is widely arched and extends well down over the mandibles ventrally and turns medially at each end as in *tenellus* and is not extended dorsally as in *urbanus*.

The knowledge of larvae of *Gelis* is still at too early a stage and the number of species so far described is too limited to allow postulations on relationships. Also, a comparative study of the many species is needed.

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